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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MUL, CHRISTINE T	

ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/583,932	ARTS ET AL.	
	Examiner	Art Unit	
	CHRISTINE T. MUI	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *53-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *53-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see REMARKS, filed 13 October 2009, with respect to claims 38 and 50 (now claims 55 and 63) have been fully considered and are persuasive. The objection of claims 38 and 50 has been withdrawn.

2. Applicant's arguments filed 13 October 2009 have been fully considered but they are not persuasive.

3. In response to applicant's assertion that Ejzak does not disclose the use of calibration gas, while this is true, the Examiner has not relied upon Ejzak to disclose the use of any calibration fluid, but rather to disclose a method for measuring carbon and other organic in aqueous solution in both batch and continuous processes (see previous office action, paragraph 8).

4. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

5. In response to the applicant's assertion that Fabinski does not show the use of gas for calibrating the entire system; the Examiner respectfully disagrees. As seen in the Fabinski reference, column 5, line 2-column 6, line 51, the reference describes the calibration process, in which a calibration gas as well as a calibration liquid are both

used for calibrating the entire system, where the gas flows through a thermal reactor (heating vessel), lines (sample transport pipes) and an analyzer and cuvette (detector).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 53-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over USP 5,292,666 to Fabinski (herein referred 'Fabinski'), and further in view of USP 4,277,438 to Ejzak (herein referred 'Ejzak') and further in view of USP 5,425,919 to Inoue et al (herein referred 'Inoue').

5. Regarding claims 53, 54 and 57, the reference Fabinski discloses a method for measuring the total content of organic carbon and of nitrogen in water or an aqueous fluid sample. An inorganic carbon dioxide part is separated from a sample with the aid of a phase separator, wherein the inorganic dioxide part is loaded with water vapor. The inorganic carbon dioxide part is passed through a first cooler and the carbon dioxide part coming from the cooler is used as comparison gas. The inorganic carbon dioxide part is fed to a comparison cuvette and the carbon dioxide part coming from the comparison cuvette is fed to a first input of a thermal reactor and a remaining sample from the phase separator is fed to a second input of the thermal reactor. The carbon part present in the sample is oxidized to carbon dioxide and the nitrogen part present is oxidized to nitrogen oxide in the thermal reactor. The measurement gas contains the total carbon dioxide part and the total nitrogen oxide part of the gas sample. Furthermore, an infrared gas analyzer can be employed for the simultaneous measurement of the components of carbon dioxide and nitrogen oxide in the sample (see column 3, lines 34-61, column 4, lines 36-39). Fabinski does not disclose using the word combustion, but instead takes the water sample that is evaporated into organic carbon and nitrogen to a thermal reactor. The thermal reactor as disclosed by Fabinski is interpreted by the examiner as being a capable of combusting the sample for the

conversion of carbon dioxide and nitrogen oxide. Furthermore, Fabinski discloses that once the gaseous part of the sample from the comparison cuvette once dried is returned to the liquid part of the sample, it is oxidized with the liquid part of the sample in the thermal reactor. It is interpreted by the examiner that the thermal reactor is the heating vessel with the heating facility, where combustion and the rapid oxidation is occurring. It is interpreted by the examiner that the phase separator is a place where an aqueous sample such as water can be evaporated and combusted into different phases so that one can obtain a gaseous sample from water.

6. Fabinski does not disclose the process as a batch process, but Ejzak discloses a method for measuring carbon and other organics in an aqueous solution in a multistage reactor system where the test solution to be separated is not only limited to a batch process but continuous process as well. Ejzak discloses continuous processing has the advantage of optimizing desired reactions and reduced interference as well as fast reaction time, but batch processing has the advantage of employing ultraviolet radiation to oxidize carbon in a sample solution (see abstract, column 1, lines 7-40, column 2, lines 45-52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process to be a batch process determining the water content in a solution, so that ultraviolet radiation can be exposed to the sample solution to oxidize carbon in small amounts and furthermore, the court held the claimed continuous operation would have been obvious in light of the batch process of the prior art, so it is interpreted by the examiner that it would be obvious to turn the continuous process of the prior art into a batch process, for either the slow addition of

gases or reactant or small or slow exposure of radiation for the oxidation of carbon in the test sample.

7. The references Fabinski, Ejzak and Inoue disclose the claimed invention. The reference Fabinski discloses a calibration cuvette having a first chamber can be furnished with a neutral gas in a path of the comparison beam of an infrared gas analyzer and can have a second chamber filled with a calibration gas in a path of a measurement beam for setting the sensitivity of the gas analyzer for the gas components carbon dioxide and nitrogen oxide to be measured (see column 4, lines 47-52). It is interpreted by the examiner that the cuvette for measuring is a reservoir for containing the gas of interest to be measured. Fabinski does not disclose the reservoir is filed in a section of a hose which the flow of a gas flows through, but as part of the method for filling the cuvettes for measured there needs to be a way for introducing gas into the cuvette such as a hose section for a particular volume of gas to be entered into the cuvette. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a section of a hose for the precise volume of gas to be added to the system rather than by a tank with a flow controller. Neither Inoue nor Fabinski discloses a hose section of predetermined volume which constitutes one section of the transport gas flow path, but Inoue discloses a flow controller for controlling the flow of high purity air into the analyzer (see column 3, lines 23-24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the section of the transport gas flow path from the transport gas source, in the form of a gas cylinder, to a calibrating reservoir using a flow controller as

disclosed by Inoue (see column 3, lines 23-24), so that only a specified amount, volume or an aliquot of measured amount of gas is entered into the apparatus and calibration gas is not wasted for unnecessary measurements.

8. Regarding claim 55, the references Fabinski, Ejzak and Inoue disclose the claimed invention. The reference Fabinski discloses the object of the present invention is to provide a method for the simultaneous measurement of the total organic carbon content and the total nitrogen content in water (see column 3, lines 11-13).

9. Regarding claim 56, the references Fabinski, Ejzak and Inoue disclose the claimed invention. Ejzak discloses the method can be conduced over a batch process in order to expose ultraviolet radiation to the sample to oxidize the carbon in the sample, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to alternate the measuring steps with calibration step with fed calibration gas so that in each measuring step, there is not any residue, creating a base line, from the products from the previous measuring step.

10. Regarding claim 58, the references Fabinski, Ejzak and Inoue disclose the claimed invention. The reference Fabinski discloses that in the method for determining the total organic carbon content and the total nitrogen content in water, there is a step for setting the zero point of the infrared gas analyzer by having a first chamber of the calibration cuvette be slid into a beam path between the first cuvette and the second receiver detector and a second chamber of the calibration cuvette can be slid between the second cuvette and the second receiver detector. A comparison gas may be fed to the comparison cuvette after termination of the setting processes for the zero point and

for the sensitivity. The measurement gas can be fed to the sample cuvette after termination of the setting process for the zero point and for the sensitivity. The steps of setting of the zero point and of the sensitivity of the gas analyzer can be repeated at predetermined time intervals for a continuous consideration of the inorganic carbon dioxide part in the sample (see column 4, line 47-column 5, line 6).

11. Regarding claim 59, the references Fabinski, Ejzak and Inoue disclose the claimed invention. The reference Fabinski discloses a calibration cuvette having a first chamber filled can be furnished with a neutral gas in a path of the comparison beam of the infrared gas analyzer and can have a second chamber filled with a calibration gas in the path of the measurement beam for setting the sensitivity of the gas analyte for the components of carbon dioxide and nitrogen oxide (see column 4, lines 47-52). It is interpreted by the examiner that the neutral gas and the calibration gas that fill the chambers of the cuvette are of a predetermined amount of the element to be detected.

12. Regarding claims 60-61, the references Fabinski, Ejzak and Inoue disclose the claimed invention. The reference Fabinski discloses that once the gas sample is taken from the phase separator it is led through the measurement channel as well as through the comparison channel form balancing the zero point and the sensitivity of the analyzer. The zero point shifting of the amplifiers disposed downstream of the receivers, based on carbon dioxide offset changes or based on water parts causing the cross sensitivity as well as aging and soiling of the gas analyzer are balanced with the adjustment setting. The end point of the two amplifiers is set to the concentration values by sliding a calibration cuvette into the beam path between the cuvettes and

receivers where the concentration is values are predetermined by the test gas enclosed in the calibration cuvette. The balancing method assured that also small measurement regions can be realized with sufficient stability and the balancing method is performed based on gas stored in storage bottle and under elimination of a requirement for used of external calibration gases (see column 6, lines 25-43). It is interpreted by the examiner that the balancing method is the correction factor. Fabinski does not specifically disclose a range under a measured signal peak, but it is interpreted by the examiner that the readings from the infrared gas analyzer produced an output based on the carbon dioxide readings that produces a signal peak.

13. Regarding claim 62, the references Fabinski, Ejzak and Inoue disclose the claimed invention except for where the highly pure water has the intended use in a pharmaceutical application. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the water in the sample solution in a pharmaceutical industry where highly pure water is needed to minimize the risk of contamination of the pharmaceutical.

14. Claims 63-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue and further in view of Fabinski.

15. Regarding claim 63, the reference Inoue discloses a total organic carbon analyzer that comprises of a carbon dioxide absorber surrounded by a heater. The total organic carbon analyzer includes beside a purgeable organic carbon analyzer, a sample vessel for reserving a water sample, a gas cylinder containing high purity air, a gas flow controller for controlling the flow of the high purity air, a rotary valve and a

syringe for controlling the flow of the sample, a total carbon combustion tube for heating the sample form the syringe or gas from the POC analyzer to a high temperature to convert all the carbon content to carbon dioxide, a pre-measurement gas processor , an NDIR for measuring the amount of carbon dioxide and a controller (see column 3, lines 11-35). Inoue discloses only one cylinder with high purity air, but does not disclose a large number of different calibration gases containing different elements. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the number of cylinders by providing more than one or multiple cylinders of a purified gas as a calibration/reference or standard of what a pure gas is, since it has been held that a mere duplication of parts of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co., 193* USPQ 8.

16. The reference Inoue discloses the claimed invention except for the gas cylinder is filled with a predetermined carbon dioxide concentration. Inoue discloses the gas cylinder is filled with high purity air (see column 3, lines 23-24). Fabinski discloses a calibration cuvette having a first chamber may be filled with a neutral gas and second chamber may be filled with a calibration gas for setting the sensitivity of the gas analyzer for the gas component carbon dioxide. Furthermore, the inorganic carbon dioxide exiting the phase separator to the first cooler is used as a comparison gas (see column 3, lines 39-44, column 4, lines 47-52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a calibration gas of carbon dioxide, rather than high purity air, so when one is measuring

the total organic carbon dioxide content, there is a proper gas zero point for comparison.

17. The references Inoue and Fabinski disclose the claimed invention. Neither Inoue nor Fabinski discloses a hose section of predetermined volume which constitutes one section of the transport gas flow path, but Inoue discloses a flow controller for controlling the flow of high purity air into the analyzer (see column 3, lines 23-24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to used a predetermined hose section with a specified volume rather than a flow controller, because this would allow for precise measurement of a volume of gas into a system rather than a flow controller based on the flow rate of the gas through the controller.

18. Regarding claim 64, the references Inoue and Fabinski disclose the claimed invention. Inoue does not disclose a plurality of gas cylinders, but discloses a single gas cylinder with high purity gas and a gas flow controller for controlling the flow of the high purity air into the system (see column 3, lines 23-24). Fabinski discloses a calibration cuvette with two chambers, where the first chamber is filled with a neutral gas and the second chamber is filled with a calibration gas (see column 4, lines 47-52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the number of gas cylinders that are allowed to be used with the analyzer so that upon measurement of any gas content in a water sample, there will be a calibration or reference gas to be used for comparison. Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention

was made to modify the plurality of gas cylinders containing calibration gases to be individually shut off so that one can monitor the flow of the gas into the analyzer for comparison.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE T. MUI whose telephone number is (571)270-3243. The examiner can normally be reached on Monday-Thursday 7-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CTM

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797